What is claimed is:

1. A communication circuit to receive and transmit signals, comprising:

an antenna element having a first terminal and a second terminal;

an electrostatic conductor positioned to shield the antenna element from electric fields, wherein the antenna element is adapted to induce a received signal at the first and second terminals when the antenna element is in a magnetic field;

a driver connected to at least one of the first and second terminals to energize the antenna element with a transmitted signal;

a differential amplifier having a first input connected to the first terminal of the antenna element and a second input connected to the second terminal of the antenna element, the differential amplifier having a selectable input impedance, wherein a lower first input impedance is used to amplify the received signal from the antenna element, and a higher second input impedance is used to monitor the transmitted signal from the driver; and

a switch to toggle an effective input impedance between the second impedance and the first impedance.

2. The circuit of claim 1, wherein the second impedance includes a combination of the first impedance and a third impedance.

3. The circuit of claim 1, wherein the driver includes a differential driver having a first output stage connected to the first terminal of the antenna element and a second output stage connected to the second terminal of the antenna element.

4. The circuit of claim 3, further comprising a control line to ground one of the first and second output stages.

5. The circuit of claim 1, further comprising:

a first resistor and a second resistor connected in series between the first antenna terminal and the first amplifier input; and

a third resistor and a fourth resistor connected in series between the second antenna terminal and the second amplifier input;

wherein the switch is adapted to shunt the second resistor and the fourth resistor such that the first impedance corresponds to the first resistor and the third resistor; and

wherein the second impedance corresponds to a combination of the first and second resistors and a combination of the third and fourth resistors.

6. The circuit of claim 1, wherein the antenna element includes a first coil portion, a second coil portion, and a capacitor connected in series between the first coil portion and the second coil portion such that high-impedance nodes between the capacitor and the first and second coil portions are shielded by the electrostatic conductor to diminish interference and potentially damaging standing voltages.

7. The circuit of claim 1, wherein the antenna element includes at least one coil portion, at least one electrostatic conductor positioned around the insulator, and an insulator between the at least one coil portion and the at least one electrostatic coil.

8. The circuit of claim 7, wherein the electrostatic conductor equally distributes an electrostatic surface charge formed by electric fields across the antenna element to equally influence the first input and the second input of the differential amplifier.

9. The circuit of claim 7, wherein the electrostatic conductor is coupled to a reference potential to remove an electrostatic surface charge formed by electric fields.

10. A communication circuit to receive and transmit signals, comprising:

an antenna element, including:

a first and a second terminal;

an inductive coil electrically connected to the first and the second terminals; and

an electrostatic conductor to shield the inductive coil against electric fields;

an amplifier circuit to amplify a magnetically-induced signal received by the antenna element, the amplifier circuit including:

a differential amplifier, including a first input, a second input and an output;

a first input impedance connected between the first input of the amplifier and the first terminal of the antenna element;

a second input impedance connected between the second input of the amplifier and the second terminal of the antenna element;

each of the first input impedance and the second input impedance including a first element and a second element;

a predetermined feedback impedance connected between the output and at least one of the two inputs of the differential amplifier; and

an input impedance shunt connected across the second element for each of the two inputs of the differential amplifier;

a driver circuit to drive the antenna element with a transmission signal; and

a control line connected to the input impedance shunt to selectively shunt the second element for each of the two inputs of the amplifier to selectively reduce an effective input impedance to the differential amplifier while receiving a signal from the antenna element.

11. The circuit of claim 10, wherein, for each of the first input impedance and the second input impedance, the first element and the second element are connected in series and are selected to:

provide a desired first band-pass response for the antenna element and a desired first gain while monitoring the transmission signal from the driver circuit; and

provide a desired second band-pass response for the antenna element and a desired second gain while receiving the magnetically-induced signal from the antenna element.

12. The circuit of claim 10, wherein the inductive coil includes a first portion and a second portion, and the antenna element includes a first capacitor connected in series between the first portion and second portion of the inductive coil, and the first capacitor is shielded by the electrostatic conductor.

13. The circuit of claim 10, wherein:

the inductive coil has a first coil portion and a second coil portion;

the first capacitor is connected between the first coil portion and the second coil portion; and

the electrostatic conductor is positioned with respect to and insulated from the first capacitor and the first and second coil portions to shield the first capacitor and the first and second coil portions from electric fields and high standing voltages.

14. The circuit of claim 13, further comprising a tuning capacitor connected to the inductive coil, wherein the first capacitor allows the tuning capacitor to be large enough to significantly reduce effects of parasitic capacitance in tuning the antenna element.

15. The circuit of claim 10, wherein the amplifier circuit is configured as a low-noise, voltage-driven operational amplifier.

16. The circuit of claim 10, wherein the amplifier circuit is configured as a low-noise, current-driven operational amplifier.

17. The circuit of claim 10, wherein the electrostatic conductor is connected to a ground reference potential to conduct the electrostatic energy away from the antenna element.

18. The circuit of claim 10, wherein the electrostatic conductor is not connected to a reference potential, the electrostatic strip functioning as an electrostatic equalizer to apply a voltage attributable to the electrostatic energy to each of the two inputs of the differential amplifier to diminish the affects of the electrostatic energy.

19. The circuit of claim 10, further comprising a control circuit to detect a radio frequency (RF) signal input, and to provide a first control signal to the input impedance shunt and a second control signal to the driver circuit, wherein in response to detecting an RF signal input, the first control signal increases the effective input impedance to the differential amplifier and the second control signal enables the driver circuit to drive the antenna element with the transmission signal.

20. A method for transmitting and receiving signals using an antenna element electrically connected to a driver and an amplifier, the method comprising:

transmitting a first signal from the antenna element, including:

driving the first signal through the antenna element using the driver; and

monitoring the first signal through an input impedance of the amplifier; and

receiving a second signal that was induced in the antenna element, including:

reducing the input impedance of the amplifier; and

receiving the second signal at the amplifier through the reduced input impedance.

21. The method of claim 20, wherein reducing the input impedance of the amplifier includes modifying a gain of the amplifier.

22. The method of claim 20, wherein reducing the effective input impedance of the amplifier includes modifying a band-pass response of the antenna element.

23. The method of claim 20, wherein reducing the input impedance includes actuating a shunt across a portion of the input impedance to reduce the input impedance.

24. The method of claim 20, further comprising shielding the antenna element from electric fields such that the second signal induced in the antenna circuit is primarily attributed to magnetic field coupling.

25. The method of claim 24, wherein shielding the antenna element includes at least partially enclosing a first coil portion, a second coil portion and a capacitor connected in series between the first and second coil portions.

26. The method of claim 24, wherein the amplifier includes a differential amplifier, the method further comprising:

spreading a surface charge attributed to electric fields across the antenna element; and

rejecting a common mode voltage attributed to the surface charge using the differential amplifier.